

REMARKS

In the final Office Action¹ dated January 23, 2009, the Examiner:

- Rejected claims 51-67 under 35 U.S.C. § 112, second paragraph;
- Rejected claims 19, 23, 25, 26, 49/19, 49/23, 49/25, 49/26, and 50 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,762,748 to Maattaet et al. ("Maattaet") in view of U.S. Patent No. 5,506,558 to Laube ("Laube");
- Rejected claims 21, 24, 33, 34, 37, 38, 43, 44, 46-47, 49/24, 49/33, 49/34, 49/37, 49/38, 49/43, 49/46, and 49/47 under 35 U.S.C. § 103(a) as being unpatentable over Maattaet, Laube, and U.S. Patent No. 5,504,502 to Arita et al. ("Arita");
- Rejected claims 35 and 49/35 under 35 U.S.C. § 103(a) as being unpatentable over Maattaet, Laube, Arita, and U.S. Patent No. 5,541,370 to Matsuda et al. ("Matsuda");
- Rejected claims 51, 64, 65, 66, and 67² under 35 U.S.C. § 103(a) as being unpatentable over Maattaet in view of U.S. Patent No. 5,831,554 to Hedayat et al. ("Hedayat");
- Rejected claims 52-62³ under 35 U.S.C. § 103(a) as being unpatentable over Maattaet, Hedayat, and Arita; and
- Rejected claim 63 under 35 U.S.C. § 103(a) as being unpatentable over Maattaet, Hedayat, Arita, and Matsuda.

By this Amendment, Applicant proposes to amend claim 51 and proposes to add new claims 68-70. Exemplary support for the new claims and the claim amendments may be found in, for example, Figures 4A, 4B, and 6B. Claims 19, 21, 23-26,

¹ The final Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicant declines to automatically subscribe to any statement of characterization in the final Office Action.

² On page 10 of the final Office Action the Examiner states that claims 51-67 are rejected under 35 U.S.C. § 103 over Maattaet and Hedayat. However, the Examiner has rejected claims 52-62 under 35 U.S.C. § 103 over Maattaet, Hedayat, and Arita. Final Office Action pages 11-15. Applicant assumes that the statement on page 10 of the final Office Action was included in error, and requests clarification if the assumption is incorrect.

³ On page 15 of the final Office Action the Examiner states that claim 63 is rejected under 35 U.S.C. § 103 over Maattaet, Hedayat, and Arita. However, the Examiner has subsequently rejected claim 63 under 35 U.S.C. § 103 over Maattaet, Hedayat, Arita, and Matsuda. Final Office Action pages 15 and 16. Applicant assumes that the rejection on page 15 of the final Office Action refers to claim 62, and requests clarification if the assumption is incorrect.

33-35, 37, 38, 43, 44, 46, 47, 49, and 50-70 will be pending upon entry of this amendment.

Rejection of Claims 51-67 under 35 U.S.C. § 112, second paragraph

In the Office Action, the Examiner rejected claim 51 under 35 U.S.C. § 112, second paragraph. Applicant proposes to amend claim 51 pursuant to the Examiner's suggestions. Accordingly, Applicant respectfully requests that the Examiner's rejection of claims 51-67 be withdrawn.

Rejection of Claims 19, 23, 25, 26, 49/19, 49/23, 49/25, 49/26, and 50 under 35 U.S.C. § 103(a)

Applicant respectfully traverses the rejection of claims 19, 23, 25, 26, 49/19, 49/23, 49/25, 49/26, and 50 under 35 U.S.C. § 103(a) as being unpatentable over Maattaet in view of Laube. A *prima facie* case of obviousness has not been established.

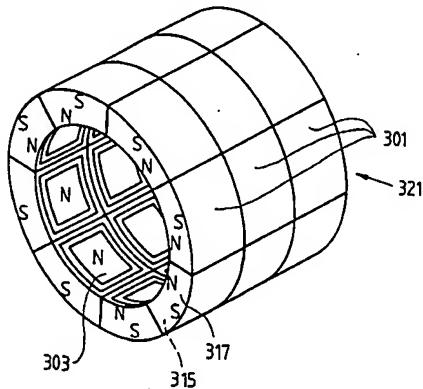
Claim 19 recites a pointing device including a ring-like magnet that comprises "inner **and** outer ring sections of **north and south magnetization** that are both in said plane along a radius of said ring-like magnet," (emphasis added). Maattaet and Laube do not render claim 19 obvious.

Maattaet discloses stacking two magnets on top of each other such that the north pole of magnet M1 faces the south pole of a second magnet M2, in order to maximize the flux density between the two magnets. (Figure 2A, column 5, lines 26-28).

On page 4 of the final Office Action, the Examiner concedes that "Maattaet does not disclose said ring-like magnet comprises inner and outer ring sections of north and south magnetization," and relies on Laube to overcome this deficiency of Maattaet.

In Figure 8 (copied below) Laube discloses a disc-like ring where "the inner radius of the ring define north poles while the part-circular faces having the outer radius of the ring define south poles." (Laube, col. 8, lines 19-22).

FIG. 8



Thus, Laube discloses a disc-like magnet comprising inner portions of only north magnetization and outer portions of only south magnetization. Even assuming that the disc-like magnet of Laube could constitute Applicant's claimed "ring-like magnet," which Applicant does not concede, such a combination would not have been obvious to one of ordinary skill in the art. This is because replacing stackable magnets M1 and M2 of Maataet with the disc-like magnet of Laube is contrary to the teachings of Maataet and would fundamentally change the operation of Maataet.

Maataet requires the use of two stackable magnets M1 and M2 such that when force F1 is applied to M1 the difference in flux densities of magnetic fields of the two magnets is detected by sensors 321-322. (Figures 2a, 2b, 3a, 3b, 4a, 5a, column 5, lines 40-60). Maataet states that magnets M1 and M2 are required in Maataet because force between the two magnets ensures that the magnets return to their centered position after force F1 is released. (Column 5, lines 35-40). Further, two magnets are

required "to prevent magnet M1 from lifting out of the recess 51 (and thus helps to avoid accidentally losing magnet M1)." (Column 6, lines 62-64).

Therefore, modifying Maataet by replacing magnets M1 and M2 with the disc-like magnet of Laube would prevent the detection of the difference in the flux densities of two magnets and the modification would also prevent the disc-like magnet from returning to its centered position. Further, the disc-like magnet would fall off recess 51 because a second magnet would not be there to prevent the magnet from lifting out.

M.P.E.P. § 2143.01 states that "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)." As a result, Maataet cannot be modified to include "a **ring-like magnet** that is movably supported in a plane, and is magnetized such that said ring-like magnet comprises inner and outer ring sections of **north and south magnetization** that are both in said plane along a radius of said ring-like magnet," (emphasis added) as recited in claim 51.

Accordingly, no *prima facie* case of obviousness has been established with regard to claim 19 and claim 19 is allowable for at least these reasons. Claims 23, 25, 26, 49/19, 49/23, 49/25, 49/26, and 50 are also allowable at least due to their dependence from claim 19.

Moreover, with respect to claim 50 Maataet and Laube do not teach or suggest magnetizing said ring-type magnet "at M sets of north-south poles, where $M = K \times I$, K equals the number of magnetic sensors, and I is an integer equal to or greater than one." Maataet does not disclose magnetizing magnets M1 and M2 with a certain

number of poles based on the number magnetic sensors. Further, Laube also does not teach or suggest a correlation between the number of poles in disc-like magnet and magnetic sensors. Thus, no *prima facie* case of obviousness has been established with respect to claim 50 for this additional reason.

Accordingly, for at least the above-noted reasons, Applicant requests withdrawal of the 35 U.S.C. § 103(a) rejection of claims 19, 23, 25, 26, 49/19, 49/23, 49/25, 49/26, and 50.

Rejection of Claims 21, 24, 33, 34, 37, 38, 43, 44, 46-47, 49/24, 49/33, 49/34, 49/37, 49/38, 49/43, 49/46, and 49/47 under 35 U.S.C. § 103(a)

Applicant respectfully traverses the rejection of claims 21, 24, 33, 34, 37, 38, 43, 44, 46-47, 49/24, 49/33, 49/34, 49/37, 49/38, 49/43, 49/46, and 49/47 under 35 U.S.C. § 103(a) as being unpatentable over Maattaet, Laube, and Arita at least because a *prima facie* case of obviousness has not been established with respect to the claims.

Claims 21, 24, 33, 34, 37, 38, 43, 44, 46-47, 49/24, 49/33, 49/34, 49/37, 49/38, 49/43, 49/46, and 49/47 depend from claim 19 and therefore include the features of claim 19. As discussed above, Maattaet and Laube do not render claim 19 obvious. In addition, Arita fails to cure the above-noted deficiencies of Maattaet and Laube. This is because Arita discloses a circular magnet 18 with a solid center and having a single north pole and a single south pole (Figures 8A and 8B). Thus, Arita does not teach or suggest the claimed “ring-like magnet,” and further does not disclose a magnet having “inner and outer ring sections of north and south magnetization that are both in said plane along a radius of said ring-like magnet,” (emphasis added) as recited in claim 19.

Accordingly, Maattaet, Laube, and Arita do not teach, suggest or render obvious the features of claim 19.

Thus, claims 21, 24, 33, 34, 37, 38, 43, 44, 46-47, 49/24, 49/33, 49/34, 49/37, 49/38, 49/43, 49/46, and 49/47 are allowable over the cited references.

Moreover, with respect to claim 21 Maattaet, Laube, and Arita do not teach or suggest a pointing device “further comprising a **printed circuit board on which a resin layer with elastic deformation is provided**, wherein said ring-like magnet is fixed to said resin layer, and said ring-like magnet is movably supported in parallel to said printed circuit board, said magnetic sensors are placed on said printed circuit board,” (emphasis added) as recited in claim 21. The Examiner relies on Arita to disclose this feature of claim 21. This, however, is not correct.

Arita discloses a slider 10 “which includes an elastic member 11 and a dome-shaped member 12 formed with an opening 12a at the center portion thereof, 13 denotes a housing supporting the slider 10 . . . 17 denotes a printed circuit board on which the magnetically reluctant elements 14 and 14' and the switch 15 are mounted.” (Figure 1, column 4, lines 41-49). As is disclosed in Figure 1 of Arita, elastic member 11 is mounted on top of housing 13 and is **not** mounted on printed circuit board 17. Such a disclosure does not teach or suggest a pointing device “further comprising a **printed circuit board on which a resin layer with elastic deformation is provided**,” (emphasis added) as recited in claim 21. See also Figure 2B ref nos. 13 and 14 in the instant application. Thus, no *prima facie* case of obviousness has been established with respect to claim 21 for this additional reason.

With respect to claim 47 Maattaet, Laube, and Arita do not teach or suggest a pointing device “wherein said magnetic sensors utilizing the magneto-resistive effect are four semiconductor magneto-resistive elements disposed symmetrically on X and Y

axes, which are two axes on a two dimensional plane of an orthogonal system, wherein **two magnetic sensors on the X axis are electrically connected at a first connection point; and two magnetic sensors on the Y axis are electrically connected at a second connection point**, and wherein said pointing device detects variations in ambient magnetic flux density caused by movement of said ring-like magnet using electric signals at the first and second connection points," (emphasis added) as recited in claim 47. The Examiner relies on Maattaet to disclose this feature of claim 47. This, however, is not correct.

Maattaet discloses four hall sensors 320, 321, 322, and 323. (Figure 3a). However, Maattaet does not teach or suggest that two of the sensors are "**electrically connected at a first connection point**" and that the other two sensors are "**electrically connected at a second connection point**." There is no disclosure of different connection points for pairs of sensors in Maattaet, Laube, or Arita. Thus, no *prima facie* case of obviousness has been established with respect to claim 47 for this additional reason.

Accordingly, for at least the above-noted reasons, Applicant requests withdrawal of the 35 U.S.C. § 103(a) rejection of claims 21, 24, 33, 34, 37, 38, 43, 44, 46-47, 49/24, 49/33, 49/34, 49/37, 49/38, 49/43, 49/46, and 49/47.

Rejection of Claims 35 and 49/45 under 35 U.S.C. § 103(a)

Applicant respectfully traverses the rejection of claims 35 and 49/45 under 35 U.S.C. § 103(a) as being unpatentable over Maattaet, Laube, Arita, and Matsuda at least because a *prima facie* case of obviousness has not been established with respect to the claims.

Claims 35 and 49/45 depend from claim 19 and therefore include the features of claim 19. As discussed above, Maattaet, Laube, and Arita do not render claim 19 obvious. In addition, Masuda fails to cure the above-noted deficiencies of Maattaet, Laube, and Arita. This is because Matsuda does not teach or suggest the claimed “ring-like magnet,” and further does not disclose a magnet having “**inner and outer ring sections of north and south magnetization** that are both in said plane along a radius of said ring-like magnet,” (emphasis added) as recited in claim 19.

Accordingly, Maattaet, Laube, Arita, and Matsuda do not teach, suggest or render obvious the features of claim 19.

Thus, claims 35 and 49/45 are allowable over the cited references, and Applicant requests withdrawal of the 35 U.S.C. § 103(a) rejection of claims 35 and 49/45.

Rejection of Claims 51 and 64-67 under 35 U.S.C. § 103(a)

Applicant respectfully traverses the rejection of claims 51 and 64-67 under 35 U.S.C. § 103(a) as being unpatentable over Maattaet in view of Hedayat. A *prima facie* case of obviousness has not been established.

Claim 51 recites a pointing device including a ring-like magnet that comprises a pointing device including “**a ring-like magnet** that is movably supported in a plane, and **is internally and externally magnetized** along said ring in said plane,” (emphasis added). Neither Maattaet nor Hedayat teach or suggest at least these features of independent claim 51.

Figure 2a of Maataet "shows a side view of **two** permanent cylindrical (or annular) **magnets** and their resulting magnetic flux densities." (Emphasis added, column 5, lines 26-28). Maataet further explains:

[a]s is shown in the figure, permanent **magnets** that are stacked such that the **North Pole of a magnet 1 (M1)** always faces the **South Pole of an adjacent magnet 2 (M2)** results in the **magnets** attracting each other and **maximizes the flux density**. (Emphasis added, column 5, lines 33-37).

Thus, Maataet discloses stacking two magnets on top of each other such that the north pole of magnet M1 faces the south pole of a second magnet M2, in order to maximize the flux density between the two magnets. But Maataet does not disclose a ring-like magnet that is internally **and** externally magnetized. Neither magnet M1 nor magnet M2 is internally **and** externally magnetized. In fact, as noted above, on page 4 of the final Office Action the Examiner concedes that "Maataet does not disclose said ring-like magnet comprises inner and outer ring sections of north and south magnetization." Since Maataet does not disclose a magnet comprising inner and outer ring sections of north and south magnetization, Maataet cannot teach or suggest "**a ring-like magnet that is movably supported in a plane, and is internally and externally magnetized along said ring in said plane**," (emphasis added) as recited in claim 51.

Hedayat also does not teach these features of claim 51. Hedayat teaches an angular position sensor 10 having a spherical magnet 18 that is pivotally mounted on drive arm 16. (Figure 1, column 3, lines 45-55). However, Hedayat does not teach or suggest that magnet 18 is "**a ring-like magnet that is . . . internally and externally magnetized**," as recited in claim 51.

Moreover, even assuming that spherical magnet 18 of Hedayat could constitute a magnet that is internally and externally magnetized, which Applicant does not concede, it would not be obvious to one of ordinary skill in the art to replace stackable magnets M1 and M2 of Maataet with a single externally and internally magnetized magnet because such a modification is contrary to the teachings of Maataet and would fundamentally change the operation of Maataet.

Maataet requires the use of two stackable magnets M1 and M2 such that when force F1 is applied to M1 the difference in flux densities of magnetic fields of the two magnets is detected by sensors 321-322. (Figures 2a, 2b, 3a, 3b, 4a, 5a, column 5, lines 40-60). Maataet states that magnets M1 and M2 are required in Maataet because force between the two magnets ensures that the magnets return to their centered position after force F1 is released. (Column 5, lines 35-40). Further, two magnets are required "to prevent magnet M1 from lifting out of the recess 51 (and thus helps to avoid accidentally losing magnet M1)." (Column 6, lines 62-64).

Therefore, modifying Maataet by replacing magnets M1 and M2 with a single magnet would prevent the detection of the difference in the flux densities of two magnets and the modification would also prevent the magnet from returning to its centered position. Further, a single magnet would fall off recess 51 because a second magnet would not be there to prevent the magnet from lifting out.

M.P.E.P. § 2143.01 states that "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)." As a

result, Maataet cannot be modified to include “**a ring-like magnet that is movably supported in a plane, and is internally and externally magnetized along said ring in said plane,**” (emphasis added) as recited in claim 51.

Accordingly, no *prima facie* case of obviousness has been established with regard to claim 51 and claim 51 is allowable for at least these reasons. Claims 64-67 are also allowable at least due to their dependence from claim 51.

Accordingly, for at least the above-noted reasons, Applicant requests withdrawal of the 35 U.S.C. § 103(a) rejection of claims 64-67.

Rejection of Claims 52-62 under 35 U.S.C. § 103(a)

Applicant respectfully traverses the rejection of claims 52-62 under 35 U.S.C. § 103(a) as being unpatentable over Maattaet, Hedayat, and Arita at least because a *prima facie* case of obviousness has not been established with respect to the claims.

Claims 52-62 depend from claim 51 and therefore include the features of claim 51. As discussed above, Maattaet and Hedayat do not teach or suggest the features of claim 51. In addition, Arita fails to cure the above-noted deficiencies of Maattaet and Hedayat. This is because Arita discloses a circular magnet 18 with a solid center and having a single north pole and a single south pole (Figures 8A and 8B). Thus, Arita does not teach or suggest the claimed “**ring-like magnet that is movably supported in a plane, and is internally and externally magnetized along said ring in said plane,**” (emphasis added) as recited in claim 51.

Accordingly, Maattaet, Hedayat, and Arita do not teach, suggest or render obvious the features of claim 51. Thus, claims 52-62 are allowable over the cited references.

Moreover, as noted above with respect to claim 47, Maattaet, Hedayat, and Arita do not teach or suggest a pointing device "wherein said magnetic sensors utilizing the magneto-resistive effect are four semiconductor magneto-resistive elements disposed symmetrically on X and Y axes, which are two axes on a two dimensional plane of an orthogonal system, wherein **two magnetic sensors on the X axis are electrically connected at a first connection point; and two magnetic sensors on the Y axis are electrically connected at a second connection point**, and wherein said pointing device detects variations in ambient magnetic flux density caused by movement of said ring-like magnet using electric signals at the first and second connection points," (emphasis added) as also recited in claim 53. Thus, no *prima facie* case of obviousness has been established with respect to claim 53 for this additional reason.

As noted above with respect to claim 19, Maattaet, Hedayat, and Arita do not teach or suggest a ring-like magnet having "inner ring sections of **both** north and south magnetization" and "outer ring sections of **both** north and south magnetization," (emphasis added) as similarly recited in claim 55. Thus, no *prima facie* case of obviousness has been established with respect to claim 53 for this additional reason.

As noted above with respect to claim 21, Maattaet, Hedayat, and Arita do not teach or suggest a pointing device "further comprising a **printed circuit board on which a resin layer with elastic deformation is provided**, wherein said ring-like magnet is fixed to said resin layer, and said ring-like magnet is movably supported in parallel to said printed circuit board, said magnetic sensors are placed on said printed circuit board," (emphasis added) as also recited in claim 60. Thus, no *prima facie* case of obviousness has been established with respect to claim 60 for this additional reason.

Accordingly, for at least the above-noted reasons, Applicant requests withdrawal of the 35 U.S.C. § 103(a) rejection of claims 52-62.

Rejection of Claim 63 under 35 U.S.C. § 103(a)

Applicant respectfully traverses the rejection of claim 63 under 35 U.S.C. § 103(a) as being unpatentable over Maattaet, Hedayat, Arita, and Matsuda at least because a prima facie case of obviousness has not been established with respect to the claims.

Claim 63 depends from claim 51 and therefore includes the features of claim 51. As discussed above, Maattaet, Hedayat, and Arita do not teach or suggest the features of claim 51. In addition, Masuda fails to cure the above-noted deficiencies of Maattaet, Hedayat, and Arita. This is because Matsuda does not teach or suggest the claimed “**ring-like magnet that is movably supported in a plane, and is internally and externally magnetized along said ring in said plane**,” (emphasis added) as recited in claim 51.

Accordingly, Maattaet, Hedayat, Arita, and Matsuda do not teach, suggest or render obvious the features of claim 51.

Thus, claims 63 is allowable over the cited references, and Applicant requests withdrawal of the 35 U.S.C. § 103(a) rejection of claim 63.

New Claims 68-70 are allowable over the cited references

New claims 68-70 are also allowable based on their dependency on independent claims 19, and further due to the features recited therein.

CONCLUSION

Applicant respectfully requests that this Amendment under 37 C.F.R. § 1.116 be entered by the Examiner, placing the claims in condition for allowance. Applicant submits that the proposed amendments of the claims do not raise new issues or necessitate the undertaking of any additional search of the art by the Examiner. Therefore, this Amendment should allow for immediate action by the Examiner.

Finally, Applicant submits that the entry of the Amendment would place the application in better form for appeal, should the Examiner dispute the patentability of the pending claims.

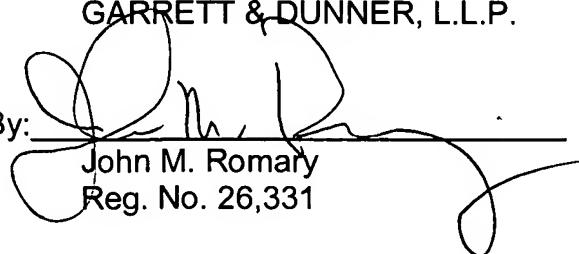
In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: April 14, 2009

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